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ABSTRACT

In spring 1992, American River College (ARC), in California, began a Beacon College project to involve students in the life of the college through the Peer Assisted Learning (PAL) program, involving semester-long, collaborative study groups in selected math and science classes. These two reports describe project outcomes for 1995 and as of January 1996. The first report provides a 1995 project update, describing the project focus, reviewing 1992-94 outcomes, and discussing changes made in the program after first-year evaluations. This report also provides outcomes for the 1994-95 academic year, indicating that the course success rate for all Beacon students at ARC and Sacramento City College was 87.7%, compared to 54.8% for non-Beacon students. The report from 1996 describes outcomes for all students participating in the PAL project at ARC and includes the following data: (1) for all 3,002 students who took PAL courses, 887 also participated in the collaborative study groups; (2) these PAL participants had a success rate of 86.6%, compared to 55.2% for the 2,115 non-participants in the classes; and (3) while English placement assessment scores were not significantly different for participating and non-participating students, both success and persistence rates were higher for participating students. Data tables are included. (TGI)

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Beacon PAL - Peer Assisted Learning
Project Update

The impetus for the Beacon Peer Assisted Learning project at American River College, now in its fourth year, came from several sources.

First was the college's three year focus, beginning in 1991, on student involvement as a key to student success, and specifically the notion of "students as teachers." A second was the work of Dr. Uri Treisman, then at UC Berkeley, now also at the University of Texas at Austin, showing that small study groups outside of class greatly enhanced the success of minority students in math. Finally, there was the "Building Communities" report by the American Association of Community Colleges Futures Commission. Small two year "Beacon" grants were available to colleges to implement the recommendations in the report, one of which was "to involve commuter students in the life of the college."

These three initiatives led Sharon McCuen, Dean of Research and Development, and Nancy Reitz, chemistry instructor and at the time Student Involvement Coordinator, to conceive of the notion of the initial Beacon project: Student Catalyst Program: Peer Assisted Learning. The project was funded by AACC and the Kellogg Foundation from1992 to 1994, with McCuen and Reitz as project co-directors..

The project initially focused on certain math and science classes that had high dropouts, particularly for women and minority. These courses are the gateway to many careers where women and minorities are under-represented. Student "learning assistants," who had completed the course satisfactorily, were selected to facilitate small group learning with students in those classes who opted to participate. Any student could participate, but women and minority students were targeted.

The groups met for three hours a week outside of class, in whatever configuration worked best for them, for the entire semester. The groups were not to

reinforce the classroom learning. The learning assistants were given special training in group tutoring and collaborative learning. They met as a group once a month to share experiences, and met individually weekly with the faculty member teaching the course.

The project began in fall of 1992 with eight classes in biology, chemistry and math, seven Beacon faculty and 24 learning assistants. At the end of the second year, over 800 students had participated.

From the beginning, the project had a strong research component. However, a decision was made by the project faculty not to have a true experimental design, with treatment and control groups, out of a concern for excluding those students who might benefit most from the project.

At the end of the first semester, focus groups were conducted with project faculty, learning assistants and students in the study groups. The faculty felt the learning assistants had brought students in the groups to an improved level of course performance. The Learning Assistants reported they felt they had improved their knowledge and skills in the subject area and felt more connected to the college. The students in the groups indicated that the tutoring sessions were helpful, that they felt a greater sense of competency and there was more involvement with classmates leading to a better social climate and a sense of social connection. There was also a greater sense of connecting on a personal level with instructors. Focus groups at the end of the second semester revealed the same positive results.

Feedback from the first year participants helped identify one major problem with the project: high attrition in some groups. This was resolved by faculty during the second year in a variety of ways, all of which involved a "carrot" for students who remained in the groups for the entire semester (extra credit, being allowed to drop one test score in return for satisfactory attendance, etc.) .

In addition to the qualitative information, data were collected and analyzed by the college research staff to assess the effect of the project on student success. For each course and for each instructor, the final grades of Beacon and non-Beacon students were analyzed for three semesters. Student success was defined as receiving an A, B or C or Credit grade in the course. The results stunned even the strongest proponents of the project..

In nearly all the courses and for all instructors, the Beacon students outperformed the non-Beacon students and the differences in the success rates were highly significant. For example, for the fall of 1993, the overall success rate of the students in the Beacon project was 78.6 per cent while the success rate for other students in the same classes was 50 per cent. In the spring of 1994, the overall success rate of Beacon students was 84.4 per cent; for the non Beacon students it was 65.5 per cent.

Final results by discipline showed that the project was most successful in chemistry classes, with Beacon students outperforming non-Beacon students by 26 per cent. In math, Beacon students outperformed non-Beacon students by 23 per cent and in biology, the difference was 18 per cent. In all disciplines , Beacon students outperformed non-Beacon students by 26 per cent.

Success rates by ethnicity are equally impressive. In fall of 1993, the success rate of non-white Beacon students was 76.5 percent compared to a success rate of 42.3 percent for non-white non-Beacon students.

At the conclusion of the two-year nationally funded Beacon project, the project staff agreed to pursue a local grant to expand the project to new disciplines at American River College (anthropology, economics and geography) and to a sister college, Sacramento City College. The project, Peer Assisted Learning Outside the Classroom, or Beacon PAL as it is called on campus, was funded by the California Community College's Fund For Instructional Improvement for 1994-95. This year FII is funding the project for its second year, with the project being extended to the other sister college, Cosumnes River College, and piloted in three feeder high schools.

Data compiled for the 1994-95 school year from American River College and Sacramento City College show the same patterns of success for Beacon students. The course success rate for all Beacon students is 87.7 per cent and for non Beacon it is 54.8 per cent. Success rates for minorities from both schools is also high: among African-American students, Beacon students had a 67.9 per cent success rate and non-Beacon students had a 43.6 per cent success rate; for Hispanic students, the Beacon success rate was 85.1 per cent, for non-Beacon, 45.4 per cent and for Asian students, the Beacon success rate was 89.7 per cent and for non-Beacon it was 52.2 per cent.

American River College is taking steps to institutionalize the project. Project management has moved from the Research and Development office to the Instruction Office, and a retired faculty member, Alyce Fiedler, has been hired to direct the project. The college's tutoring program is now offering group tutoring as well as one-on-one tutoring. And, small collaborative study groups are an important component of the college's new Freshman Success program.

One of the most significant outcomes of this project is synthesized from comments made by the students in the groups over the past three years -- that is, that the support and self confidence students receive from the group experience is as important as the academic reinforcement for student success.

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NEW BEACON OUTCOMES !!

You may have lost track of how many items about "Beacon" course sections have crossed your desk in the past years. Nevertheless, we now have some new information to share with you. Just in case you haven't ever heard of Beacon, it is a project formally titled "Student Catalyst Program: Peer Assisted Learning." After the original grant terminated, it was replaced with funding from the California Community Colleges Fund for Instructional Improvement.

The essence of the program is that participating faculty have at least one former student who is trained to be a learning assistant. These learning assistants tutor currently enrolled students in the specific course subject matter. It is not for casual "call-before-the-test" type of tutoring. Rather, each currently enrolled student must commit to a specified number of hours for meeting with the tutor. Yet the Beacon tutoring is voluntary, meaning that a student may choose to enter the program or not participate.

Also, there is no penalty for not joining a Beacon group. The ultimate purpose of Beacon is to improve student course success - especially for those who are likely "at-risk." Previous results reported on a semester-by-semester basis have been very favorable in that Beacon students outperformed Non-Beacon students in nearly every course section. Because of these results, the Association of California Community College Administrators (ACCA) voted the Beacon project #1 out of 10 outstanding programs that work.

Now the update which compiles all data from all semesters across all Beacon courses (sections): In Table 1 are the final grade outcomes for 3,002 students.

Table 1. Student Grades For Beacon and Non-Beacon Expressed As Percentages.

Grade	Beacon (n = 887)	Non-Beacon (n = 2,115)
A	34.9	15.2
B	31.7	20.5
C+Cr	20.0	19.5
D,F,WT,NC	13.4	44.8
Success Rate	86.6	55.2
Withdrawal (WT) Rate	7.0	29.1
Chi square = 320.89, $p < .001$		

These results in Table 1 are statistically significant in that the 887 Beacon students earned higher grades (and had a higher success rate) than the Non-Beacon students.

In Figure 1 are success rates (A+B+C+CR) broken out by ethnicity. The dotted line across the vertical bars indicates the average success rate for all students at ARC. Not only did the Beacon students beat the average, but all ethnic groups within Beacon did so! Clearly the tutoring works for all groups.

A Critical Question:

But what about student self-selection into the program? Maybe the better students signed up for the Beacon experience and that is what accounts for their higher success. This is a valid (and nagging) problem for "purist" researchers, and of course we are! Ideally, students would have been randomly assigned to Beacon or the traditional experience. Yet that research protocol is not feasible. One cannot assign any student to something not wanted. Randomly assigning only volunteers was not favored by the participating faculty either. The only option, then, was self-selection.

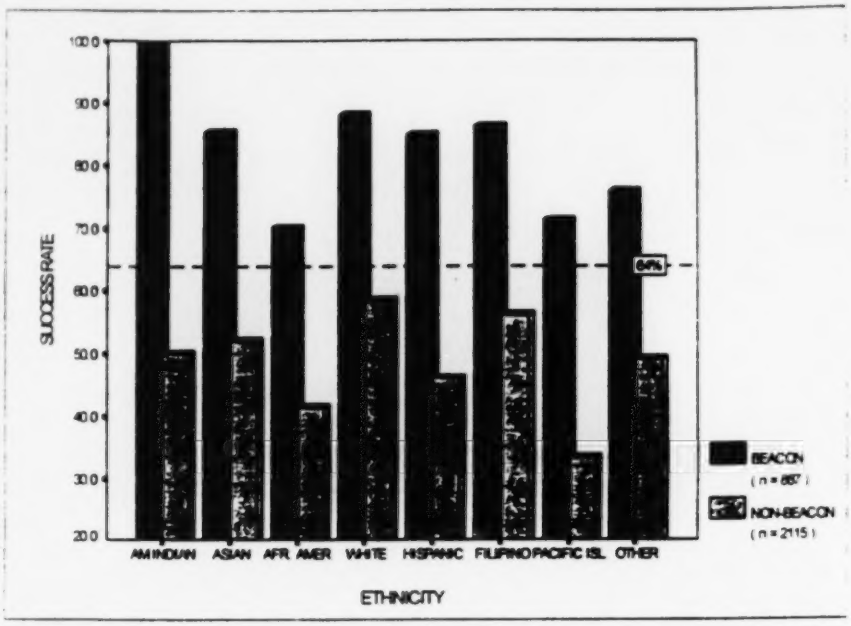

Figure 1. Rates of Beacon and Non-Beacon Success by Ethnicity.

To help answer the critic regarding self-selection as the true cause of greater Beacon success, we identified all Beacon and Non-Beacon students who had English placement assessment scores on record (APS test). There were 497 Beacon students and 1,202 Non-Beacon students who were tested with this instrument. The respective means and standard deviations were:
Beacon = 50.35, SD = 11.66; Non-Beacon = 51.00, SD = 11.39. The difference between these means is not statistically significant, (t = -1.06, p > .05). This finding indicates that Beacon students do not have higher English placement skills than Non-Beacon students.

Yet the 1,699 students who were assessed represent 57% of all students enrolled in Beacon course sections. It is possible that the students who were assessed are a biased sample. To shed light on this problem, we compared the success rates for the assessed group (Beacon and Non-Beacon) with those students having no assessment test record (also Beacon and Non-Beacon). These results are presented as Table 2 and show that both Beacon groups (assessed and not-assessed) had significantly higher rates of course success than their Non-Beacon counterparts. In fact, the success rates of 86.5% and 86.7% are essentially identical. Clearly, the assessed students were not a unique group apart from the not-assessed.

Table 2. Success Rates (%) for Assessed and Not-assessed by Beacon and Non-Beacon

Assessed	Beacon (n=497)	Non-Beacon (n=1,202)
Success	86.5	54.6
Non-Success	13.5	45.4
Chi square = 155.57, p <.001		

Not Assessed	Beacon (n=390)	Non-Beacon (n=913)
Success	86.7	56.1
Non-Success	13.3	43.9
Chi square = 112.74, p <.001		

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Finally, two more analyses were run. One was to determine if the success rates for Beacon students were different between the assessed and the not-assessed groupings. The second analysis determined whether there were differences between the assessed and not-assessed groups for Non-Beacon students only. These results are presented as Table 3 and indicate that there are no statistically significant differences.

Table 3. Success Rates (%) for Assessed and Not-assessed by Beacon Only and Non-Beacon Only.

Beacon Only	Assessed (n=497)	Not-Assessed (n=390)
Success	86.5	86.7
Non-Success	13.5	13.3
Chi square = .00 (not significant)		

Non-Beacon Only	Assessed (n=1,202)	Not-Assessed (n=913)
Success	54.6	56.1
Non-Success	45.4	43.9
Chi square = .47 (not significant)		

Persistence (Reenrollment) Rates for Beacon Students

Four Beacon and Non-Beacon groups that enrolled in a Beacon section starting either in spring 93, fall 93, spring 94, or fall 94 were tracked in order to determine their persistence rates. Calculating the average percent for each group resulted in a consistent pattern as illustrated in Figure 1.

With all four groups, at each subsequent term following the starting semester, the Beacon (or tutored) students persisted at a greater rate than their Non-Beacon counterparts who were enrolled in the same course sections. However, even with this remarkable finding, one needs to be a tad cautious about concluding that the Beacon experience was the sole cause for the greater persistence. Yet it certainly seems logical to arrive at that

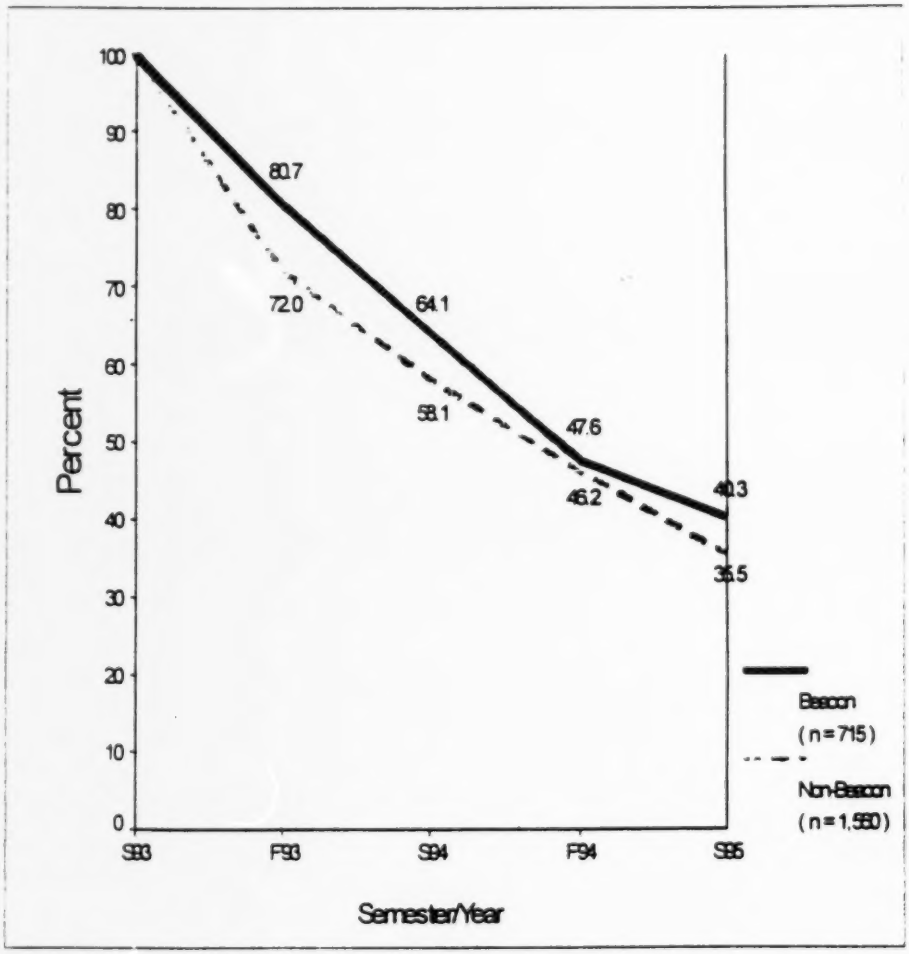

Figure 1. Average Persistence Rates (Re-enrollment) For Beacon and Non-Beacon Groups (unduplicated counts).

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conclusion because there are no other clear explanations for the consistent difference in persistence across semesters. One explanation could be that there are motivational differences between Beacon and Non-Beacon Students. Another possibility is that Beacon students learn some valuable lessons about necessary behavior for being highly successful in college. These might include working within study groups, staying current, and asking lots of questions about material not fully understood. And consider this: The difference in Beacon persistence earned an additional $84,524 in revenue!!

Conclusions:

1. Overall, Beacon students had higher course success rates than Non-Beacon students (see Table 1) .

2. The superiority of Beacon student performance held true for all ethnic groups (See Table 2).

3. The English placement assessment scores for Beacon students were not significantly different from Non-Beacon students (see text).

4. The success rate for Beacon students was significantly higher than Non-Beacon students irrespective of whether subgroups were assessed or not (see Table 3).

5. The success rates for only Beacon students did not vary as a function of whether assessed or not. And the success rates for only Non-Beacon students was the same irrespective of whether the students were assessed or not (see Table 4).

6. There is strong evidence that the Beacon experience is a powerful "treatment," and plays some part in causing the higher performance. Thus, the argument that "only better students sign up for Beacon which explains the higher performance" is <u>not</u> supported by the evidence. Motivation may be an important factor in selection.

7. Beacon students show consistently higher persistence rates than their Non-Beacon counterparts (See Figure 1).